09/459703

CofC

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Kiran A. Padwekar

Examiner: Meonske, Tonia

Patent No.: 7,100,027

Group Art Unit: 2181

Issue Date: August 29, 2006

Docket No: 884.027US1

Title: SYSTEM AND METHOD FOR REPRODUCING SYSTEM EXECUTIONS USING A REPLAY HANDLER (As Amended)

Commissioner for Patents
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Name

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IN UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No.:	7,100,027	Docket No:	884.027US1
Issue Date:	August 29, 2006	Patentee:	Kiran A. Padwekar
Customer No.:	21186	Confirmation No.:	1539
Title	SYSTEM AND METHOD FOR REPRODUCING SYSTEM EXECUTIONS USING A REPLAY HANDLER (As Amended)		

REQUEST FOR CERTIFICATE OF CORRECTION

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It is requested that a Certificate of Correction be issued correcting printing errors appearing in the above-identified United States patent. A copy of the text of the Certificate in the suggested form are enclosed.

Issuance of the Certificate of Correction would neither expand nor contract the scope of the claims as properly allowed, and re-examination is not required.

Pursuant to 1.20(a), please charge Deposit Account No. 19-0743 in the amound of $100.00.

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Respectfully Submitted
KIRAN A. PADWEKAR

By his Representatives,

SCHWEGMAN LUNDBERG & WOESSNER P.A
P.O. Box 2938
Minneapolis, MN 55402
(612) 373-6900

Date : May 16, 2008

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(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO : 7,100,027 Page (1) of 1

DATED : August 29, 2006

INVENTOR(S) : Padwekar

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the face page, in field (75), in "Inventor", in column 1, line 1, delete "Santa Clara" and insert - - San Jose - -, therefor.

On the face page, in field (56), under "Other Publications", in column 2, line 1, after "L." insert - - , - -.

On the face page, in field (56), under "Other Publications", in column 2, lines 4-5, delete "techdd. htm" and insert - - techdd.htm - -, therefor.

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SCHWEGMAN, LUNDBERG & WOESSNER P.A.
P.O. BOX 2938
Minneapolis, MN 55402

Atty Docket No: 884.027US1

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Issued Patent Proofing Form **SLWK: 884.027US1**
Note: P = PTO Error **S = SLWK Error** **Proofread By: Sidharth (09/07/2006)**

US Serial No.: 09/459,703 **US Patent No.: US 7,100,027 B1** **Issue Dt.: Aug. 29, 2006**
Title: SYSTEM AND METHOD FOR REPRODUCING SYSTEM EXECUTIONS USING A REPLAY HANDLER
PR Instructions: Face Page, Claims and Abstract

Sr. No.	P/S	Original		Issued Patent		Description of Error
		Page	Line	Column	Line	
1	P	Page 2 of 3 Oath or Declaration filed (04/10/2000)	1 (Inventor's Residence)	First Page Col. 1 (Inventor)	1	Delete "Santa Clara" and insert - - San Jose - -, therefor.
2	P	Page 1 of 1 List of references cited by examiner (06/30/2004)	Entry 1 Line 1 (Non-Patent Documents)	First Page Col. 2 (Other Publications)	1	After "L." insert - - , - -.
3	P	Page 1 of 1 List of references cited by examiner (01/12/2005)	Entry 1 Line 1 (Non-Patent Documents)	First Page Col. 2 (Other Publications)	4-5	Delete "techdd. htm" and insert - - techdd.htm - -, therefor.

US007100027B1

(12) **United States Patent**
Padwekar

(10) **Patent No.: US 7,100,027 B1**
(45) **Date of Patent: Aug. 29, 2006**

(54) **SYSTEM AND METHOD FOR REPRODUCING SYSTEM EXECUTIONS USING A REPLAY HANDLER**

(75) Inventor: **Kiran A. Padwekar**, Santa Clara, CA (US)

(73) Assignee: **Intel Corporation**, Santa Clara, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/459,703**

(22) Filed: **Dec. 13, 1999**

(51) **Int. Cl.**
G06F 11/30 (2006.01)
G06F 11/36 (2006.01)

(52) **U.S. Cl.** **712/227**; 712/228; 714/17; 714/25; 717/127

(58) **Field of Classification Search** 712/227, 712/228; 714/17, 25, 30; 717/127–135
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,688,263	A	8/1972	Balogh, Jr. et al.	340/172.5
4,095,268	A	6/1978	Kobayashi et al.	364/200
5,301,198	A *	4/1994	Kawasaki	717/131
5,530,804	A *	6/1996	Edgington et al.	703/28
5,555,249	A	9/1996	Hilley et al.	371/21.1
5,678,003	A	10/1997	Brooks	395/183.1
5,704,033	A	12/1997	Park	395/183.06
5,724,505	A *	3/1998	Argade et al.	714/45
5,740,413	A	4/1998	Alpert et al.	395/568
5,758,059	A	5/1998	Alexander	395/183.06
5,951,696	A	9/1999	Naaseh et al.	714/34
5,963,737	A *	10/1999	Mealey et al.	710/260
6,065,106	A *	5/2000	Deao et al.	712/24
6,125,416	A	9/2000	Warren	710/71
6,212,626	B1 *	4/2001	Merchant et al.	712/218
6,240,509	B1 *	5/2001	Akkary	711/207
6,247,118	B1 *	6/2001	Zumkehr et al.	712/228
6,311,292	B1 *	10/2001	Choquette et al.	714/30
6,343,358	B1 *	1/2002	Jaggar et al.	712/227
6,349,397	B1	2/2002	Koga et al.	714/727
6,356,960	B1	3/2002	Jones et al.	710/5
6,598,112	B1	7/2003	Jordan et al.	347/221
6,877,086	B1 *	4/2005	Boggs et al.	712/218
6,925,584	B1	8/2005	Padwekar et al.	

OTHER PUBLICATIONS

Hennessey, John L. et al., Computer Architecture A Quantative Approach, Second Edition, 1996, Morgan Kaufman Publishers, Inc., pp. 39-41.*
http://www.d.umn.edu/~jmackiew/comp3130_moreinfo_techdd.html publication date unknown.*
Borland C++ for Windows User's Guide, 1993, Borland International, Inc., version 4.0, pp. 103-122.*

* cited by examiner

Primary Examiner—Fritz Fleming
Assistant Examiner—Tonia L. Meonske
(74) *Attorney, Agent, or Firm*—Schwegman, Lundberg, Woessner & Kluth, P.A.

(57) **ABSTRACT**

Methods and systems for replaying arbitrary system executions are disclosed. A system includes a storage element, a memory hierarchy and a processor. The memory hierarchy is coupled to the storage element. The processor is coupled to the memory hierarchy. The processor executes instructions from the memory hierarchy. A replay handler is loaded into the memory hierarchy. The replay handler is executed for replaying at least one execution. In another embodiment, a method for replaying executions is disclosed. Normal execution of a processor is interrupted. A replay/restart kernel is loaded. At least one execution is replayed. Normal execution of the processor is resumed.

18 Claims, 4 Drawing Sheets